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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/575,505	08/29/2006	Manuel Ferrer	FERRER ET AL-1 PCT	3956
25889	7590	07/27/2009	EXAMINER	
COLLARD & ROE, P.C. 1077 NORTHERN BOULEVARD ROSLYN, NY 11576			WORLEY, CATHY KINGDON	
		ART UNIT	PAPER NUMBER	
		1638		
		MAIL DATE	DELIVERY MODE	
		07/27/2009	PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/575,505	FERRER ET AL.
	<b>Examiner</b>	<b>Art Unit</b>
	CATHY K. WORLEY	1638

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on \_\_\_\_\_.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 21-30 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_ is/are allowed.  
 6) Claim(s) \_\_\_\_ is/are rejected.  
 7) Claim(s) \_\_\_\_ is/are objected to.  
 8) Claim(s) 21-30 are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
     1. Certified copies of the priority documents have been received.  
     2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
     3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ .                                    |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____.   | 6) <input type="checkbox"/> Other: _____ .                        |

**DETAILED ACTION**

***Election/Restrictions***

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Groups I-VIII, claim(s) 21-26 (in part), drawn to a process for producing a protein in a host ; wherein for Group I the host is an animal cell and contains a DNA sequence encoding Cpn60 or a functional mutant thereof; Group II the host is a plant cell and contains a DNA sequence encoding Cpn60 or a functional mutant thereof; Group III the host is a bacterial cell and contains a DNA sequence encoding Cpn60 or a functional mutant thereof; Group IV the host is a fungal or yeast cell and contains a DNA sequence encoding Cpn60 or a functional mutant thereof; wherein for Group V the host is an animal cell and contains a DNA sequence encoding Cpn10 or a functional mutant thereof; Group VI the host is a plant cell and contains a DNA sequence encoding Cpn10 or a functional mutant thereof; Group VII the host is a

bacterial cell and contains a DNA sequence encoding Cpn10 or a functional mutant thereof; Group VIII the host is a fungal or yeast cell and contains a DNA sequence encoding Cpn10 or a functional mutant thereof. Claims directed to non-elected hosts or sequences will be withdrawn from consideration. It is noted that claim 21 is limited to a host micro-organism, therefore if animal cell or plant cell is elected then claim 21 will be withdrawn from consideration. It is also noted that claim 22 is not properly dependent because it is broader in scope than claim 21 from which it depends.

Groups IX and X and XI, claim(s)s 28 (in part), drawn to a plant that can grow at lower ambient temperatures due to the presence of a DNA sequence encoding a cold active functional chaperonin; wherein the chaperonin for Group IX is Cpn60 or a stabilized ring mutant of Cpn 60; the chaperonin for Group X id Cpn10, and the chaperonin for Group XI is a functional homolog of Cpn60 or Cpn10.

**CLAIMS 27 and 29 LINK THE INVENTIONS OF GROUPS IX-XI**

Group XII, claim(s) 30, drawn to the use of a plant that can grow at lower ambient temperatures. It is noted that claim 30 is a “use” claim, and if it is elected, the Applicant is advised to amend the claim to be a proper process claim that has active method steps.

2. Claims 27 and 29 link the inventions of groups IX-XI. The restriction requirement between the linked inventions is subject to the nonallowance of the linking claims. Upon the allowance of the linking claims, the restriction requirement as to the linked inventions shall be withdrawn and any claims depending from or otherwise including all the limitations of the allowable linking claims will be entitled to examination in the instant application. Applicants are advised that if any such claims depending from or including all the limitations of the allowable linking claims are presented in a continuation or divisional application, the claims of the continuation or divisional application may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant applications. Where a restriction requirement is withdrawn, the provisions of 35 U.S.C. 121 are no longer applicable. *In re Ziegler*, 44 F.2d 1211, 1215, 170 USPQ 129, 131-32 (CCPA 1971). See also MPEP 804.01.

3. The inventions listed as Groups I-XII do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

The technical feature linking groups I-XII is a host cell expressing a cold active functional chaperonin. However, in the prior art (*The Plant Journal* (1998) Vol. 13; pp. 311-316), Holland et al. teach plants that express a plastid chaperonin, cpn60, which is shown to be upregulated upon cold treatment; therefore it is a cold-

active functional chaperonin (see figure 4 on page 313). Therefore, the technical feature linking the inventions of groups I-XII does not constitute a special technical feature as defined by PCT Rule 13.2 as it does not define a contribution over the prior art.

Accordingly, Groups I-XII are not so linked by the same or a corresponding special technical feature as to form a single general inventive concept.

4. This application contains claims directed to more than one species of the generic invention. These species are deemed to lack unity of invention because they are not so linked as to form a single general inventive concept under PCT Rule 13.1.

The species are functional mutants of Cpn60 or Cpn10 and are as follows:

- i) a stabilized single ring mutant chaperonin Glu461
- ii) a mutant chaperonin Lys468Thre/Ser471 Gly

Applicant is required, in reply to this action, to elect a single species to which the claims shall be restricted if no generic claim is finally held to be allowable. The reply must also identify the claims readable on the elected species, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered non-responsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

The claims are deemed to correspond to the species listed above in the following manner:

Claims 23 and 28 read on the mutant species

The following claim(s) are generic: claim 21 is generic to claim 23 and claim 27 is generic to claim 28.

The species listed above do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, the species lack the same or corresponding special technical features for the following reasons: .

The technical feature linking species is a Cpn or a functional mutant thereof. However, in the prior art both Cpn60 and Cpn10 were already known (see alignments appended to this Office Action). Therefore, the technical feature linking the species of mutant Cpn proteins does not constitute a special technical feature as defined by PCT Rule 13.2 as it does not define a contribution over the prior art.

Accordingly, the mutant Cpn proteins are not so linked by the same or a corresponding special technical feature as to form a single general inventive concept.

5. Applicant is advised that the reply to this requirement to be complete must include (i) an election of a species or invention to be examined even though the requirement may be traversed (37 CFR 1.143) and (ii) identification of the claims encompassing the elected invention.

The election of an invention or species may be made with or without traverse. To preserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the restriction requirement, the election shall be treated as an election without traverse.

6. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

7. The examiner has required restriction between product and process claims.

Where applicant elects claims directed to the product, and the product claims are subsequently found allowable, withdrawn process claims that depend from or otherwise require all the limitations of the allowable product claim will be considered for rejoinder. All claims directed to a nonelected process invention must require all the limitations of an allowable product claim for that process invention to be rejoined.

In the event of rejoinder, the requirement for restriction between the product claims and the rejoined process claims will be withdrawn, and the rejoined process claims will be fully examined for patentability in accordance with 37 CFR 1.104. Thus, to be allowable, the rejoined claims must meet all criteria for patentability including the requirements of 35 U.S.C. 101, 102, 103 and 112. Until all claims to the elected product are found allowable, an otherwise proper restriction requirement between product claims and process claims may be maintained.

Withdrawn process claims that are not commensurate in scope with an allowable product claim will not be rejoined. See MPEP § 821.04(b). Additionally, in order to retain the right to rejoinder in accordance with the above policy, applicant is advised that the process claims should be amended during prosecution to require the limitations of the product claims. **Failure to do so may result in a loss of the right to rejoinder.** Further, note that the prohibition against double patenting

rejections of 35 U.S.C. 121 does not apply where the restriction requirement is withdrawn by the examiner before the patent issues. See MPEP § 804.01.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CATHY K. WORLEY whose telephone number is (571)272-8784. The examiner can normally be reached on M-F 10:00 - 4:00, with additional variable hours before 10:00 and after 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anne Marie Grunberg can be reached on (571) 272-0975. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Cathy K. Worley/  
Primary Examiner, Art Unit 1638

## APPENDIX - SEQUENCE ALIGNMENT

RESULT 1  
CH10\_OLEAN  
ID CH10\_OLEAN Reviewed; 97 AA.  
AC Q8KM31;  
DT 11-APR-2003, integrated into UniProtKB/Swiss-Prot.  
DT 01-OCT-2002, sequence version 1.  
DT 25-NOV-2008, entry version 28.  
DE RecName: Full=10 kDa chaperonin;  
DE AltName: Full=Protein Cpn10;  
DE AltName: Full=groES protein;  
GN Name=groS; Synonyms=cpn10, groES;  
OS Oleispira antarctica.  
OC Bacteria; Proteobacteria; Gammaproteobacteria; Oceanospirillales;  
OC Oleispira.  
OX NCBI\_TaxID=188908;  
RN [1]  
RP NUCLEOTIDE SEQUENCE [GENOMIC DNA].  
RC STRAIN=DSM 14852 / RB8;  
RA Ferrer M., Lunsdorf H., Chernikova T.N., Yakimov M.M., Golyshin P.N.,  
RA Timmis K.N.;  
RT "Cold-adapted chaperonins, Cpn60 and Cpn10 from the  
RT hydrocarbonoclastic psychrophile, Oleispira antarctica RB8, and their  
RT ability to interact with a non-native 102 kDa carboxylesterase.";  
RL Submitted (AUG-2002) to the EMBL/GenBank/DDBJ databases.  
CC -!- FUNCTION: Binds to Cpn60 in the presence of Mg-ATP and suppresses  
CC the ATPase activity of the latter.  
CC -!- SUBUNIT: Heptamer of 7 subunits arranged in a ring (By  
CC similarity).  
CC -!- SUBCELLULAR LOCATION: Cytoplasm (By similarity).  
CC -!- SIMILARITY: Belongs to the groES chaperonin family.  
CC -----  
CC Copyrighted by the UniProt Consortium, see <http://www.uniprot.org/terms>  
CC Distributed under the Creative Commons Attribution-NoDerivs License  
CC -----  
DR EMBL; AJ505131; CAD43723.1; -; Genomic\_DNA.  
DR HSSP; P09621; 1P3H.  
DR GO; GO:0005737; C:cytoplasm; IEA:UniProtKB-KW.  
DR GO; GO:0005524; F:ATP binding; IEA:InterPro.  
DR GO; GO:0006457; P:protein folding; IEA:HAMAP.  
DR HAMAP; MF\_00580; -; 1.  
DR InterPro; IPR001476; Chaprnonin\_Cpn10.  
DR Gene3D; G3DSA:2.30.33.40; Chaprnin\_Cpn10; 1.  
DR PANTHER; PTHR10772; Chaprnin\_Cpn10; 1.  
DR Pfam; PF00166; Cpn10; 1.  
DR PRINTS; PR00297; CHAPERONIN10.  
DR ProDom; PD000566; Chaprnin\_Cpn10; 1.  
DR PROSITE; PS00681; CHAPERONINS\_CPN10; 1.  
PE 3: Inferred from homology;  
KW Chaperone; Cytoplasm.  
FT CHAIN 1 97 10 kDa chaperonin.

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FT          /FTId=PRO_0000174797.
SQ      SEQUENCE    97 AA;  10286 MW;  8A3DC9E05FBF4B2 CRC64;
Query Match           100.0%;  Score 481;  DB 1;  Length 97;
Best Local Similarity 100.0%;  Pred. No. 2.3e-34;
Matches    97;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps
0;

Qy          1 MKIRPLHDRVRRKEETATAGGIILPGAAAEPNQGVVISVGTGRILDNGSVQALAVN 60
           ||||||| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
Db          1 MKIRPLHDRVRRKEETATAGGIILPGAAAEPNQGVVISVGTGRILDNGSVQALAVN 60

Qy          61 EGDVVVFGKYSGQNTIDIDGEELLILNESDIYGVLEA 97
           ||||||| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
Db          61 EGDVVVFGKYSGQNTIDIDGEELLILNESDIYGVLEA 97

```

RESULT 1

CH60\_OLEAN

ID CH60\_OLEAN Reviewed; 548 AA.

AC Q8KM30;

DT 25-NOV-2002, integrated into UniProtKB/Swiss-Prot.

DT 01-OCT-2002, sequence version 1.

DT 04-NOV-2008, entry version 34.

DE RecName: Full=60 kDa chaperonin;

DE AltName: Full=Protein Cpn60;

DE AltName: Full=groEL protein;

GN Name=groL; Synonyms=cpn60, groEL;

OS Oleispira antarctica.

OC Bacteria; Proteobacteria; Gammaproteobacteria; Oceanospirillales;

OC Oleispira.

OX NCBI\_TaxID=188908;

RN [1]

RP NUCLEOTIDE SEQUENCE [GENOMIC DNA].

RC STRAIN=DSM 14852 / RB8;

RA Ferrer M., Lunsdorf H., Chernikova T.N., Yakimov M.M., Golyshin P.N.,

RA Timmis K.N.;

RT "Cold-adapted chaperonins, Cpn60 and Cpn10 from the

RT hydrocarbonoclastic psychrophile, Oleispira antarctica RB8, and their

RT ability to interact with a non-native 102 kDa carboxylesterase.";

RL Submitted (AUG-2002) to the EMBL/GenBank/DDBJ databases.

CC -!- FUNCTION: Prevents misfolding and promotes the refolding and

CC proper assembly of unfolded polypeptides generated under stress

CC conditions (By similarity).

CC -!- SUBUNIT: Oligomer of 14 subunits composed of two stacked rings of

CC 7 subunits (By similarity).

CC -!- SUBCELLULAR LOCATION: Cytoplasm (By similarity).

CC -!- SIMILARITY: Belongs to the chaperonin (HSP60) family.

CC -----

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CC -----

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DR EMBL; AJ505131; CAD43724.1; -; Genomic\_DNA.  
 DR HSSP; Q9Z462; 1IOK.  
 DR SMR; Q8KM30; 2-524.  
 DR GO; GO:0005737; C:cytoplasm; IEA:UniProtKB-KW.  
 DR GO; GO:0005524; F:ATP binding; IEA:HAMAP.  
 DR GO; GO:0051082; F:unfolded protein binding; IEA:HAMAP.  
 DR GO; GO:0042026; P:protein refolding; IEA:HAMAP.  
 DR HAMAP; MF\_00600; -; 1.  
 DR InterPro; IPR001844; Chaperin\_Cpn60.  
 DR InterPro; IPR002423; Cpn60/TCP-1.  
 DR InterPro; IPR012723; GroEL.  
 DR PANTHER; PTHR11353; Cpn60/TCP-1; 1.  
 DR Pfam; PF00118; Cpn60\_TCP1; 1.  
 DR PRINTS; PR00298; CHAPERONIN60.  
 DR PRINTS; PR00304; TCOMPLEXTCP1.  
 DR TIGRFAMs; TIGR02348; GroEL; 1.  
 DR PROSITE; PS00296; CHAPERONINS\_CPN60; 1.  
 PE 3: Inferred from homology;  
 KW ATP-binding; Chaperone; Cytoplasm; Nucleotide-binding.  
 FT CHAIN 1 548 60 kDa chaperonin.  
 FT /FTId=PRO\_0000063466.  
 SQ SEQUENCE 548 AA; 56872 MW; 7AE998CC84E47AE2 CRC64;

Query Match 100.0%; Score 2676; DB 1; Length 548;  
 Best Local Similarity 100.0%; Pred. No. 1.2e-124;  
 Matches 548; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 MAAKDVLFGDSARAKMLVGVNILADAVRTLGPGRNVVIEKSGAPIITKDGVSAREI 60  
 |||||||  
 Db 1 MAAKDVLFGDSARAKMLVGVNILADAVRTLGPGRNVVIEKSGAPIITKDGVSAREI 60

Qy 61 ELKDKFENMGAQMVKVEVASQANDQAGDGTATVLAQAIISEGLKSVAAGMNPMDLKRG 120  
 |||||||  
 Db 61 ELKDKFENMGAQMVKVEVASQANDQAGDGTATVLAQAIISEGLKSVAAGMNPMDLKRG 120

Qy 121 DKATAAVVAAIKEQAQPCLDTKAIAQVGTISANADETVGRLIAEAMEKVGKEGVITVEEG 180  
 |||||||  
 Db 121 DKATAAVVAAIKEQAQPCLDTKAIAQVGTISANADETVGRLIAEAMEKVGKEGVITVEEG 180

Qy 181 KGLEDELDVVEGMQFDRGYLSFYFINNQEKMTEVENPLILLVDKKIDNLQELLPILENV 240  
 |||||||  
 Db 181 KGLEDELDVVEGMQFDRGYLSFYFINNQEKMTEVENPLILLVDKKIDNLQELLPILENV 240

Qy 241 AKSGRPLLIVAAEDVEGQALATLVNNLRGTFKVAAVKAPGFDRRKAMLQDLAILTGGQV 300  
 |||||||

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Db 241 AKSGRPLLIVAAEDVEGQALATLVVNNLRGTFKVAAVKAPGFGDRRKAMLQDLAILTGGQV  
300

Qy 301 ISEELGMSLETADPSSLGTASKVVIDKENTVIVDGAGTEASVNTRVDQIRAEIESSTSDY  
360 |||||||  
Db 301 ISEELGMSLETADPSSLGTASKVVIDKENTVIVDGAGTEASVNTRVDQIRAEIESSTSDY  
360

Qy 361 DIEKLQERVAKLAGGVAVIKVGAGSEMEMKEKKDRVDDALHATRAAVEEGVVAGGGVALI  
420 |||||||  
Db 361 DIEKLQERVAKLAGGVAVIKVGAGSEMEMKEKKDRVDDALHATRAAVEEGVVAGGGVALI  
420

Qy 421 RALSSVTVVGDNEDQNVGIALALRAMEAPIRQIAGNAGAEGSVVVDVKVSGTGSFGFNAS  
480 |||||||  
Db 421 RALSSVTVVGDNEDQNVGIALALRAMEAPIRQIAGNAGAEGSVVVDVKVSGTGSFGFNAS

Qy 481 TGEYGDMIAMGILDPAKVTRSSLQAAASIAGLMITTEAMVADAPVEEGAGGMPDMGGMGG  
540 |||||||  
Db 481 TGEYGDMIAMGILDPAKVTRSSLQAAASIAGLMITTEAMVADAPVEEGAGGMPDMGGMGG  
540

Qy 541 MGGMPGMM 548  
Db 541 MGGMPGMM 548 |||||||

/Cathy K. Worley/  
Primary Examiner, Art Unit 1638